INVARIANT PATTERN RECOGNITION

Abstract

An adaptive pattern classifier makes use of training patterns and a known non-linear invariance transformation to generate a classifier representation based on an infinite set of virtual training samples on a training trajectory. Given the non-linear invariance transformation, optimization can be formulated as a semidefinite program (SDP), which is given by a linear objective function that is minimized subject to a linear matrix inequality (LMI). In this manner, a small training set may be virtually supplemented using the non-linear invariance transformation to learn an effective classifier that satisfactorily recognizes patterns, even in the presence of known transformations that do not change the class of the pattern.